

From owner-qrp-l@netcom.com Fri May 19 14:47:50 1995
Message-Id: <v01510103abe25fa1b157@[132.235.72.11]>
Date: Fri, 19 May 1995 09:47:50 -0500
From: weinfurtner@ouvaxa.cats.ohiou.edu (Greg Weinfurtner)
Subject: <didn't bother with a subject>

unsubscribe QRP-L

From owner-qrp-l@netcom.com Fri May 19 20:52:26 1995
From: timcook@erinet.com
Date: Fri, 19 May 95 16:52:26 EDT
Message-Id: <9505192052.AA18066@eri.erinet.com>
Subject: <didn't bother with a subject>

unsubscribe qrp-l

From owner-qrp-l@netcom.com Sat May 20 01:43:39 1995
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re: another 30M VX0
Date: Fri, 19 May 95 20:43:39 EST5EDT
Message-Id: <1995May19.204339.17815@wb3ffv.ampr.org>

As for the article in Ham Radio in 1982 about the extended range VFO, W7Z0I had a short-lived column in the QRP Quarterly circa 1985, and he wrote on the same subject. To this day I still have not tried his circuit, but he claimed one could get 100 KHz spread on 40 meters. I've been promising myself to experiment with it some day, and will of course report the results if I ever do. 73 and Queue Our Pea DE WA8MCQ
--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org
The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-l@netcom.com Fri May 19 14:57:47 1995
From: PDouglas12@aol.com
Date: Fri, 19 May 1995 10:57:47 -0400
Message-Id: <950519105739_124317887@aol.com>
Subject: Re: DELTA LOOP ALTERNATIVE.....

Cam, similar story. At age 9 or so discovered one pole of house wiring made a nifty antenna for crystal sets. Demo'd this for pal down the block who had one of those Remco store bought xtal sets (real men made Knight Kits).

Decided it would work even better if we grounded the set to the radiator.

Ground wire ran across his bedspread--set it on fire. I realized my mistake quickly enough to disconnect without electrocuting anyone and the bedspread was the only casualty. I wasn't allowed in their house for a while!

Preston WJ2V

From owner-qrp-l@netcom.com Fri May 19 20:22:38 1995

Date: Fri, 19 May 1995 13:22:38 -0700 (PDT)

From: Monte Stark <ku7y@sage.dri.edu>

Subject: Re: DELTA LOOP ALTERNATIVE.....

Message-Id: <Pine.SUN.3.90.950519131246.13237A-100000@nimbus>

Well, I can tell about the time I was sitting on my bed with a modulator sitting on my lap. Had a pair of 807's, nice big xfmr and a good power supply.

To make a long story short I put my hand someplace that I shouldn't have. The "charge" I recieved caused me to snap straght. This in turn caused the modulator to fly across the room, hit the wall just below the ceiling, fall to the floor with a loud noise. This brought Mom on the run and you can guess the rest.

For you old timers you also know that as a kid I had to steal the 6L6 from the radio in the front room. Now it was broke and had to put one of the JAN metal 6V6's in the radio. Daddy couldn't quite figure out why the radio didn't sound as loud a usual!

Also for the old timers, I lost the only 2 good 807's that I had so I had to find another junk tv set, pull the xfmr, put the 5vac and 6.3vac windings in series and put 1625's in it... :-(

All that to run about 10w of AM on 10m! Ahhhh, the good ole dazs.....

73, Ron, dah, dah (I'm three times slower than Chuck)

.....KU7Y.....ARCI #8829.....Monte "Ron" Stark.....
.....ku7y@sage.dri.edu.....Sun Valley, Nevada....
.....ARRL.....NorCal #330.....NRA LIFE.....

From owner-qrp-1@netcom.com Fri May 19 18:16:10 1995
Message-Id: <199505191720.KAA23237@interval.interval.com>
Date: Fri, 19 May 1995 10:16:10 -0800
From: burdick@interval.com (Wayne Burdick)
Subject: Final list of NorCal 40A mods

I'd like to thank all of you who suggested minor modifications to the NorCal 40A design. These changes will make the rig even easier to build and align, and performance will improve a bit on both transmit and receive. I've listed the most important of the tweaks below, and I'll publish the whole list in a future QRPP. (Some people have asked me why I didn't call this updated rig a "NorCal 40B." I'm reserving that for the next Big Change.)

What's really gratifying is to see the rig evolve. It is approaching optimum performance given the constraints of simplicity, price, and low current drain, and it sure has come a long way since the original NC40! Back then I didn't feel that the design was ready to be commercialized, but it is now, and many of us, especially me, have learned a lot in the process.

72,
Wayne, N6KR

*** Electrical Changes ***

- All JFETs to be J309s. These devices have low pinch off ($V_{gs} = 4V$ max), which will eliminate AGC threshold setting difficulties. They also happen to have high transconductance, resulting in power output of up to 3 watts on my test unit (14V supply).

- Receiver image rejection has been improved by 10dB by providing a better match between the VFO and the receive mixer. The original light coupling (5pF) caused the buffered voltage at pin 7 of the receive mixer to be too high in some cases. The 5pF cap has been replaced by an R-C low-pass filter/attenuator.

- Toroid windings have all been adjusted slightly to make alignment more repeatable from unit to unit.

- The AGC SIP R-array will now be 2.2M, improving AGC characteristics.

*** Mechanical Changes ***

- Front/rear panel corners will have a slight radius to improve top and bottom cover fit.
- The PCB will be reworked to eliminate minor problems, and the PCB legends will be allowed to overlap pads, making components much easier to identify. The "mystery pads"--for access to the keyline, +8V, etc.--will now be labelled.
- Self-adhering, nonconductive spacers will be supplied for the crystals and final transistor, eliminating the need to manually space these parts above the PCB. (These are cheap--only about 3 cents each for the crystal spacers.)
- The proper length of DC power plug will now be supplied. The original was unnecessarily long.
- The case will be supplied painted and screened. Looks like the color scheme will be some variation on dark/light blue, nicely textured.

From owner-qrp-1@netcom.com Fri May 19 03:16:11 1995
 Date: Thu, 18 May 1995 20:16:11 -0700 (PDT)
 From: patrick cook <kb0oxd@netcom.com>
 Subject: Re: Fwd: MFJ 9420 SSB Rig
 Message-Id: <Pine.3.89.9505182030.A17841-01000000@netcom7>

Hi Gang:

On Thu, 18 May 1995, J. Duffy Beischel wrote:

> In fact, MFJ would go crazy selling this
 > rig in a six meter version. Can you imagine the demand!

Yeah!! Somebody could actually begin a _VHF_ QRP club if that happened.

From owner-qrp-1@netcom.com Fri May 19 12:14:09 1995
 Date: Fri, 19 May 1995 12:14:09 +0000
 From: david@rmit.edu.au (David Taylor)
 Subject: Re: Mike, WA8MCQ's TV tuner VFO
 Message-Id: <01HQOQJKOPMAQ06Q7A@pitvax.xx.rmit.edu.au>

Mike C, in a recent message, mentioned.....

> One of those
>backlogged items will be a resurrecting of an item I submitted to the
>column while W3TS was still writing it--using an old mechanical UHF TV
>tuner (not the electronic kind) for a VFO.

Seeing this idea mentioned again reminded me to write up my experience with an UHF tuner VFO for 80m that I'm using with my R2 receiver.

The tuner I found is a Matsushita with 4 gang air variable, which I estimate to be about 20 - 30pF per section. The plates were all assembled with solder so were easy to remove with a hot soldering iron. The tuner has 4 compartments - I mounted a DG MOSFET (oscillator) in the 1st, toroid L and fixed caps in the 2nd, JFET buffer and transistor buffer stages in the 3rd and 4th. I adjusted the emitter resistor of the last buffer so that it delivers 13dBm, though it could go higher. The RF waveform on the source of the oscillator MOSFET was distorted, so I connected the buffer to a tapped capacitor network across the inductor. Output is very clean on a CRO.

>The down side is that the plates have an odd shape, so tuning is nonlinear,
>>but you can mitigate that by only using part of its range for your VFO.

Very true! My version tunes 200kHz from 3500 and has cramped but useable tuning on the low end, where I'm most interested. To get this range the variable caps in the 1st and 2nd compartments were connected in parallel. The dial mechanism is quite good - a plastic disc that had the TV channel numbers on it has been covered and new calibrations applied. The reduction drive requires 6 turns end to end and is smooth - the only problem is some backlash that would be a problem on a main station rig but could be lived with on a portable QRP rig.

>A future project will be building an entire transmitter into the tuner box.

That would be possible - though I found it a squeeze just to get the buffer bits in. But then, if you can fit a Tx in a DB25 backshell then this would be easy! I posted a query recently about power MOSFET PA stages and got useful pointers - I've since gotten more info and components from the CW Ops QRP Club (VK) which I recently joined ;-)

Now to build a PA using IRF510 MOSFETS. Thanks for posting the idea, Mike!

David Taylor
Computer Centres
RMIT (Bundoora Campus)
Melbourne 3083 Australia

Amateur Radio: VK3JKP
CW Ops QRP Club (VK, No 423)
Internet: david@rmit.edu.au

From owner-qrp-l@netcom.com Sat May 20 01:50:09 1995
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re: Mike, WA8MCQ's TV tuner VFO
Date: Fri, 19 May 95 20:50:09 EST5EDT
Message-Id: <1995May19.205009.17815@wb3ffv.ampr.org>

No, you got it wrong--we didn't build rigs into DB-25 backshells. We built them into the little plastic bottles that the pins come in when you get DB-25 connectors with crimp-on pins. The bottles are approx 0.75 cubic inch volume--that was Phase I. Phase II involves doing the same in a little tin box that contains 5 cartridge fuses, though sadly they are starting to use plastic for those. But you gave me a good idea for a Phase III of the DB-25 challenge, which is to do it in the backshell of a DB-25; certainly solves the connector problem :-). And it would be quite easy to mill out the insides of the backshell, at least for those of us who are fortunate enough to have access to the machine shops at work :-). And what frequency would my rig be on if I ever did this? Why, 7040, of course, with the neat little crystals that I just ordered from KI6DS! 73 and Queue Our Pea DE WA8MCQ

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Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org
The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-l@netcom.com Fri May 19 13:22:58 1995
Date: Fri, 19 May 1995 08:22:58 -0500 (EST)
From: David Moody <MOODY@admin.rose-hulman.edu>
Subject: Re: Modest Proposal (on SMC kits)
Message-Id: <01HQ0IJNBFIHTRWYV@ADMIN.Rose-Hulman.EDU>

>What is reflow?
>Is it easier to solder that way?
>Do they make components pre-tinned?

Well, the basic idea is to already have solder on the component and on the pads that the component will be attached. When the whole thing gets heated up, the solder melts, flows together, and then you remove the heat, and the solder solidifies. It is the same idea as just touching the iron to a bad solder joint to reflow the solder so that the joint will be better. This technique is used in production of SMC PC boards due to the fact that

the parts can be placed on the board by machine and the everything heated up so that the solder becomes liquid, and when it is cooled you have a board with a bunch of parts. It also eliminates that nasty problem of getting multilegged parts to sit flat while you try to solder one lead at a time.

I think it is easier to solder this way for SMC because the parts are so small and can have a tendency to "stick" to the iron and move around on you. It does take some practice because you are heating a larger area, and may have to worry about other components. When it comes to de-soldering and replacing components with many leads, it is very easy! Also, you do need a level work area, so things don't slip and slide. And a heat gun made for SMC repair work is ideal, but not always necessary for hobby work. They do make these components pre-tinned with what is a very small amount of solder. In this case I find it good and necessary to use some external flux to make sure that everything is "clean" as you are doing the soldering.

I have to admit that a course in soldering techniques is a very good thing if you can ever take one. If you have a good technical college in the area, you might check with them to see if something is available. It is amazing all of the tricks and gotchas of soldering that you can learn from a course like that.

The next best way is to go to a library and see if they have any books on soldering, and then try to do some of the things in the book.

Good luck with SMC. It can be fun, but it can also be frustrating. Usually when you are putting a SM transistor on a board and it is the only one you have, and your tweezers have some stuff on them and the part sticks to the tweezers and as you lift up, the part goes up with the tweezers, then falls off and bounces into a shag carpet. At this point, you will more than likely scream. ;-)

72, David "Ah choo, oops" Moody, KD8NY, C'mon Field Day

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David A. Moody           | E-mail: David.Moody@Rose-Hulman.edu  
Admin. Programmer/Analyst | Finger: mgrdam@crux.Rose-Hulman.edu  
Rose-Hulman Inst. of Tech. | Amateur Call: KD8NY (CW QRP) ex-WB9MMD  
Terre Haute, IN USA 47803 | (VMS Rules!!! (but RSTS was fun.))  
Wk Ph: 812.877.8183      |  
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```

Any facts expressed within belong to everybody.

Any opinions expressed within are my own and are not
necessarily the same as my employer, family, friends, etc.
It is up to you to know the difference.

From owner-qrp-l@netcom.com Fri May 19 17:30:51 1995
Date: Fri, 19 May 1995 12:30:51 -0500
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <199505191730.MAA29357@chuck.dallas.sgi.com>
Subject: Moving to LeHigh.EDU

Gang,

You will have to subscribe yourself. It will not be automatic.
Be sure to:

1. Send message to LISTSERV@LEHIGH.EDU (not case sensitive)
2. Message shall be

SUBSCRIBE QRP-L Joe Ham K5FJZ

With the call, when we query the list, we will have some idea
who and where you are --- as far as that gets us now days. :-)

73 es tn timer

p.s. REMEMBER there is a contest this weekend.

--

Chuck Adams K5FO CP-60 adams@sgi.com

From owner-qrp-l@netcom.com Fri May 19 20:55:04 1995
Date: Fri, 19 May 1995 14:55:04 -0600
From: Paul Harden <pharden@aoc.nrao.edu>
Message-Id: <199505192055.0AA02998@zia.aoc.nrao.edu>
Subject: NE602 vs AD607

Comparing the manufacturer's specifications of the NE602, AD607 and AD608.
The AD607 and 608 are relatively new devices from Analog Devices called
"monoceivers." The 607 has built in detectors, the 608 does not, plus
some other differences. While I have made some lab measurements on these
devices, I'll not include them at this time. I have NOT seen any strong
differences from the published values.

	NE602	AD507	AD508
Zin	1.5K	3-6K	2K
Zout	1.5K	200	200
Cin	3pF	3pF	3pF

Minimum Detectable			
Signal (MDS)	-118dBm	-95dBm	-95dBm
Noise Figure	5dB	11dB	11dB
3rd Order Intercept	-13dBm	-5dBm	-5dBm
1dB Compression point	-10dBm	-15dBm	-15dBm
Conversion gain	18dB	26dB	24dB
Total device gain	18dB	100dB	110dB
Supply current	3 mA	8 mA	7 mA

The high total gains of the AD607 and AD608 is due to the fact they have internal IF amplifiers while the NE602 does not.

All of these devices are intended primarily for the telecommunications and cellular telephone industry, where FM is the main modulation mode. Comparing these specs shows that the newer chips do not significantly outperform the NE602. While the 602 is perhaps an old boring IC, its "bang for the buck" ratio can't be beat.

Paul NA5N
dar dar (drify VFO!)

From owner-qrp-l@netcom.com Fri May 19 05:39:31 1995
Date: Fri, 19 May 1995 00:39:31 -0500
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <199505190539.AAA28558@chuck.dallas.sgi.com>
Subject: NEW SERVER for QRP-L

Gang,

Well, it's is finally here. A new server for this list.

Starting Friday, May 19th, 1995, and during the weekend, whenever you get this message, you should move over and start posting there.

Here are just a few reasons for doing so:

1. The new server will be faster than the old one.
2. The new server will also have all the archives from the beginning from the previous server and this server (netcom.com).
3. You will be able to get the archives via email, ftp, or www.
4. New schematics in both postscript and upon demand HPGL will be

- posted there. Things like the NN1G Mark I, etc.
5. PostScript forms for ARCI contests, awards applications, and ASCII files for the FCC exams, and numerous other data files.
 6. You will now be able to get DAILY-DIGESTS!!! For those that dial into their internet provider and download mail, this will be a great cost benefit and it will also bring back a number of individuals that have unsubscribed during the past two years or so.
 7. Hopefully, within a short period of time, the headers from mail from the server will start with [QRP-L], thus those with mail filters can key on this and save them to a specific file and/or directory.

The mail server will be running ListProc 6.0c, not majordomo, but I think you will like the new one much better.

When you subscribe, you will get instructions on how to get the digests, ftp, etc. Additional information will be posted as directories, files, etc. become finalized or change. Remember, this is dynamic and changes will be made as some reorganization takes place as we continue to grow.

Send email to `LISTSERV@LEHIGH.EDU`

in body of message put

`SUBSCRIBE QRP-L Your_Name Your_Call`

an example would be

`SUBSCRIBE QRP-L John Doe K5FJZ`

After the server gets your message you will get back a welcome message and additional information. Be sure to save it, if you can. If you lose it, there will be postings periodically later on on how to get it again.

You will want to unsubscribe from netcom.com by sending a message to `listserv@netcom.com` with `unsubscribe QRP-L` in the body. Our many thanks to Mike, N1IST, for his support of this group and the hard work that went into it.

It is as simple as that gang. Thanks for your support and contributions over the years. Little did we realize that when this all began that it would grow so fast.

Remember that it is not all that long before we begin

the propagation study of 30M and then before you know it the fox hunt on 40M will be here. For the newbies, the fox hunt will start in October, so you need to be General class or higher license and you need to get up the best antenna that you can. Mike, WA8MCQ, wrote in the last QRP ARCI Quarterly that he did not know if there would be a prize again. I assure you that there will be. It's not all that much of an expense for me to keep doing it. My pleasure.

dit dit and see you on the new QRP-L list.

--

Chuck Adams K5FO CP-60 adams@sgi.com

From owner-qrp-l@netcom.com Fri May 19 14:37:07 1995
Date: Fri, 19 May 1995 07:37:07 -0700 (MST)
From: "Mark E. Monninger" <markem@PrimeNet.Com>
Subject: Re: NEW SERVER for QRP-L
Message-Id: <Pine.BSI.3.91.950519073422.3214B-100000@usr3.primenet.com>

Chuck...

Do I understand it correctly that we all need to unsubscribe to qrp-l@netcom.com and then subscribe to the new one? That is, the folks currently on the list will not be magically transferred to the new one?

Mark AA7TA

From owner-qrp-l@netcom.com Fri May 19 20:14:13 1995
From: PDouglas12@aol.com
Date: Fri, 19 May 1995 16:14:13 -0400
Message-Id: <950519161412_124632558@aol.com>
Subject: Re: NEW SERVER for QRP-L

Hey Mark, just read the mail! Postings gave specific instructions for subscribing via listserv@Lehigh.EDU (body of message: subscribe QRP-L Fullname Call) . Successful subscription will result in response with full instructions WHICH SHOULD BE SAVED so you don't send unsubscribe messages to the whole list (this is not really directed at you but to those who are planning to unsubscribe this annoying way in the future!) The message from the old list said it will close down automatically on Monday--no need to

unsubscribe. Am posting this to the old list to help others who may have missed the postings for orderly transition. Preston WJ2V

From owner-qrp-l@netcom.com Fri May 19 20:49:16 1995
Date: Fri, 19 May 1995 13:49:16 -0700 (MST)
From: "Mark E. Monninger" <markem@PrimeNet.Com>
Subject: Re: NEW SERVER for QRP-L
Message-Id: <Pine.BSI.3.91.950519133958.28239A-100000@usr3.primenet.com>

Hey Preston....I did read the posting. Several times. Very carefully. It indeed told how to subscribe to the new list but nowhere does it say it was necessary for those already subscribed to the old list to subscribe to the new one. It has been my experience that when a list is transferred to a new server that the subscription list is also transferred. Evidently that is not the case here. I guess that I am not as good at reading between the lines as some folks.

Mark

From owner-qrp-l@netcom.com Sat May 20 03:18:40 1995
From: PDouglas12@aol.com
Date: Fri, 19 May 1995 23:18:40 -0400
Message-Id: <950519231839_125334250@aol.com>
Subject: Re: NEW SERVER for QRP-L

Yo, Mark, you missed the other posting from the outgoing server. It said netcom will shut down its QRP-L on Monday, so no need to unsubscribe from the old server. No flame intended--just info. 72, Preston WJ2V

From owner-qrp-l@netcom.com Fri May 19 03:34:51 1995
From: JCoote@aol.com
Date: Thu, 18 May 1995 23:34:51 -0400
Message-Id: <950518233449_124111228@aol.com>
Subject: Osc/buffer for HexFET PA?

I am thinking of building a small VX0 companion transmitter for a shortwave portable.

I'm considering using commonly available IRF-511 HexFET(s) in the PA.

I thought about driving the PA "Class D", with 50/50 squarewave as done in

many LOWFER designs, but more components are required.

Has anyone driven an IRF-511 with the output from a 2N2222A VXO directly?
(I would think the high-impedance input of the HexFET would not pull the
osc)

I would appreciate your comments. I hate reinventing the wheel ;-)

72, Jay WB6AAM

From owner-qrp-l@netcom.com Fri May 19 17:37:36 1995
Date: Fri, 19 May 1995 10:37:36 -0700
From: myers@bigboy73.west.sun.com (Dana Myers)
Message-Id: <199505191737.KAA02016@vr1000.West.Sun.COM>
Subject: Re: Osc/buffer for HexFET PA?

> From JCoote@aol.com Thu May 18 22:05:42 1995
> From: JCoote@aol.com
> Date: Thu, 18 May 1995 23:34:51 -0400
> To: qrp-l@netcom.com
> Subject: Osc/buffer for HexFET PA?
>
> I am thinking of building a small VXO companion transmitter for a shortwave
> portable.
>
> I'm considering using commonly available IRF-511 HexFET(s) in the PA.
>
> I thought about driving the PA "Class D", with 50/50 squarewave as done in
> many LOWFER designs, but more components are required.
>
> Has anyone driven an IRF-511 with the output from a 2N2222A VXO directly?
> (I would think the high-impedance input of the HexFET would not pull the
> osc)
>
> I would appreciate your comments. I hate reinventing the wheel ;-)

The input impedance of the FET is essentially a large value resistor
(on the order of > 1G) in parallel with a couple of fairly large
value capacitors. The capacitors have some fairly small series
resistance, but you can ignore that. In other words, the DC
impedance is quite high, but the AC impedance can be quite low.

Do you have a data sheet for the IRF511? The Ciss value is an
indication of the input capacitance, but the real truth is seen

of the gate V vs Q graph (the Motorola data sheets have these). Using thos graph and the voltage swing intended at the gate, you can figure out how much charge has to be added and removed from the gate on each cycle. I don't recall the exact number, but it is quite a bit, comparable to > 500pF.

The motorola data book has an excellent discussion of gate drive characteristics, which (of course) don't mention RF directly but relate much information useful at RF.

From owner-qrp-1@netcom.com Fri May 19 05:53:00 1995
Date: Fri, 19 May 95 00:53 BST-1
From: oddjob@cix.compulink.co.uk (Stephen Walters)
Subject: Pixie talk
Message-Id: <memo.398387@cix.compulink.co.uk>

Dear all,

Can some nice person post me the circuit diagram of this radio?

regards

Steve

oddjob@cix.compulink.co.uk
> qrp-1
>
> I have not followed the thread of Pixie talk on qrp-1, but
> mine puts out 300 mw on transmit and probably 30? mw on
> receive. It causes severe TVI both on receive and transmit.
>
> Nice low cost TV jammer, and you can make contacts on it too !
>
> W1FMR

From owner-qrp-1@netcom.com Fri May 19 20:51:48 1995
Date: Fri, 19 May 1995 14:51:48 -0600
From: Paul Harden <pharden@aoc.nrao.edu>
Message-Id: <199505192051.0AA02904@zia.aoc.nrao.edu>
Subject: QRP RIG DESIGN TESTS

NEW QRP RIG DESIGN

OVERVIEW. Myself (Paul NA5N) and a friend/co-worker (Mike NE7H), who is also one of our RF front-end engineers at the observatory, decided to design a new QRP rig using some modern parts a few months back and have made some progress ... though in its infancy yet. He is working on the VFO and XMTR portion, I am working on the receiver and QSK portion. Whether this will ever develop into a true rig project is yet to be seen, but we do have a couple of working prototypes using some new surface mounted chips ... for which some of the PRELIMINARY results are discussed herein.

VFO DESIGN. Mike has played with several approaches. The most promising so far seems to be a new voltage controlled oscillator (VCO) made by Micro Circuits Labs (MCL). It is a small metal can, PCB mount unit about half the size of a mini-relay. Depending on a few external parts, it has a range of 1MHz to nearly 1 GHz. The flavor he's using is the lowest frequency one, used at 3 MHz to produce a 10 MHz IF on 40M. The output frequency is tuned with a 10K pot, eliminating the rare and expensive open capacitors. It works fairly nice, but has some phase noise. Our next project is to up the frequency into its linear region then divide down to 3 MHz ... either by a down-converter mixer or this lends naturally to developing a dual-conversion superhet. The phase noise, stability, etc. at 25 MHz, for example, is excellent. At 3 MHz its a bit drifty and produces healthy harmonics. Its a \$12 device in small quantities.

RECEIVER DESIGN. I have working prototypes of a 40M receiver using both the new Analog Devices AD607 and AD608. They are similar to an NE602, except have internal IF amplifiers, filters, detectors, etc. for a total device gain of ~100dB. They are neat new chips (surface mount), but frankly, a little disappointed so far with the PRELIMINARY results. First, the bottom sensitivity is about -95dBm, compared with -118dBm for the NE602. Clearly we need 20dB of gain ahead of these guys, so there's another chip, which kinda counteracts the savings of having the mixer and IF amp in one chip. Second, the output of the mixer is just as trashy as a '602 (images) so no real improvement there. It will require the same level of filtering as a NE602/MC1350 arrangement. Lastly, the 1dB compression point and the magic juju "3dB intercept points" are virtually the same on these new guys as the NE602.

In short ... don't throw those NE602's away just yet.
(I'll post the comparison specs separately)

We now have several things we want to try:

1. Use an NE602 for the "front end" and -118dBm sensitivity, except use a much higher LO/IF frequency to take advantage of the MCL VCO stable characteristics as discussed above. The AD607/608 stage would then be the 2nd mixer for a double conversion superhet, probably at 10MHz IF.
2. Use an integrated amplifier to pick up the 20dB gain needed, such as an Avantek or MCL amplifier family. I also want to play around with some

of these new damn fast OP amps that have unity gain bandwidths in the hundreds of MHz. Pad and pencil doodling shows an active filter made with these devices could make a nice RF ampl with fairly narrow bandpass. This could be tunable, or made wideband, should we strive for our eventual design goal of a 3-band QRP rig.

3. If either above looks good, then dump the NE602 and use an SBL mixer or similar passive mixer for the first stage, which should provide a cleaner conversion than a NE602.

That's the PRELIMINARY progress report so far. Will keep you posted as we continue to play around. Of course comments and feedback always welcome.

My REAL eventual goal should a nice design ever come out of this, would be to work with one of the QRP clubs, where you buy the PCB, with surface mounted components already mounted (and tested), and you build the rest. YOU would be responsible for obtaining the rest of the parts ... either from your own junk box, or from say DigiKey. Everything I'm using so far comes from DigiKey - my goal is for all the parts to be 100% available from DigiKey. Anything special would be part of the board when you unpack it. Of course with the board would be the complete documentation package. Any comments on this approach welcome.

72, Paul NA5N (and Mike NE7H)

Paul NA5N
dik dik (dern key clicks!)

From owner-qrp-1@netcom.com Fri May 19 15:24:33 1995
Date: Fri, 19 May 1995 08:24:33 -0700
Message-Id: <199505191524.IAA28241@mailhost.primenet.com>
From: bobhigh@PrimeNet.Com (Bob Hightower)
Subject: QRP+ Order

I've tried four times this morning to reach Index Labs...busy signals. Either they are very busy or not in yet, so I'll keep trying and let you know what the status of the order is. Last time I talked to them, they were going to ship around the 12th, but with the large number of units in the order, it may take a few days to get them all out.

73's, Bob KI7MN

From owner-qrp-l@netcom.com Sat May 20 00:25:07 1995
Date: Fri, 19 May 1995 17:25:07 -0700
From: myers@bigboy73.west.sun.com (Dana Myers)
Message-Id: <199505200025.RAA03220@vr1000.West.Sun.COM>
Subject: Re: QRP+ Order

> Date: Fri, 19 May 1995 08:24:33 -0700
> To: qrp-l@netcom.com
> From: bobhigh@PrimeNet.Com (Bob Hightower)
> Subject: QRP+ Order
>
> I've tried four times this morning to reach Index Labs...busy signals. Either
> they are very busy or not in yet, so I'll keep trying and let you know what
> the status of the order is. Last time I talked to them, they were going to
> ship around the 12th, but with the large number of units in the order, it
> may take a few days to get them all out.

Um, if Index Labs is doing their best to get the order out, time spent on the phone is time not spent getting your order out, and calling them every day or two isn't get the orders shipped any sooner.

Personally, I say "be patient".... Index Labs has already cut a good deal for the QRP-L group, and annoying Index Labs may reduce the chance of such a good deal again in the future.

Just a thought, not meant to offend anyone.

Dana
Dana.Myers@West.Sun.Com

From owner-qrp-l@netcom.com Fri May 19 12:23:27 1995
Date: Fri, 19 May 1995 07:23:27 -0500 (EST)
From: cebik@UTKVVX.UTCC.UTK.EDU
Subject: QRP-L Lehigh indeed open for business
Message-Id: <Pine.3.89.9505190719.A543456363-01000000@utkvx.utk.edu>

My final message to this list: have subscribed to QRP-L@LEHIGH.EDU successfully; evidence that it is indeed in working order. Will UNSUB this list after the weekend to permit me to receive last messages that may be sent through it. However, all future outgoing to INET will be on the new server. Let me add my personal thanks to N1IST for his hard work in keeping this list in good working order lo these many moons.

73 to netcom.com
GM to lehigh.edu

LB, W4RNL

From owner-qrp-l@netcom.com Sat May 20 05:39:43 1995
From: rohrwerk@netcom.com (John Seboldt)
Message-Id: <199505200539.WAA25895@netcom23.netcom.com>
Subject: Quoting
Date: Fri, 19 May 1995 22:39:43 -0700 (PDT)

Quick netiquette reminder: when responding to a message, quote only what you need from a previous message. I am most annoyed in the various lists I subscribe to, that a whole message is quoted at the end, INCLUDING THE MAIL HEADERS! This simply is NOT necessary, and wastes bandwidth on the net and the readers' time. Interestingly, it's on the two ham lists I'm on, ham-tech and QRP-L, that this runs most rampant.

: John Seboldt rohrwerk@netcom.com / CW: It don't mean a thing
: Amateur radio K0JD... / if it ain't got that swing!
: Church of the Annunciation, / Di dah, di dah, di dah, di dah...
: Minneapolis / (sorry, Duke!)

From owner-qrp-l@netcom.com Thu May 18 16:25:15 1995
Date: Thu, 18 May 1995 09:25:15 -0700 (PDT)
From: Steven Wilson <randyw@crl.com>
Subject: Re: series vs parallel VFO tank
Message-Id: <Pine.SUN.3.91.950518091810.17151A@crl5.crl.com>

Hi Tom..... A subject that I like :-)

Series L - Vackar Circuit extermely stable even at 14 mhz
Caps - I like polystrene the best. There are many different types of NPO's and Silver Mica
Transistor - I stay away from the MPF102's and use 2N5484/2n5486 the 2n4416 is better than the 102's but believe 5884's best in the stability department.
Cores - T-68-7 (white)
Construction - Build like a tank, shield, dual bearing var cap, etc.

I am still looking for Varcaps to beat the above.

de stan ak0b

e-mail via randyw@crl.com

From owner-qrp-l@netcom.com Fri May 19 00:43:48 1995
Date: Thu, 18 May 1995 19:43:48 -0500 (CDT)
From: "Perry W. Ogletree" <pogletre@mail.coin.missouri.edu>
Subject: Re: series vs parallel VFO tank
Message-Id: <Pine.SUN.3.91.950518194118.26279A-100000@bigcat>

Try your "drift" test with air core inductors. I think you are seeing the "L" change value due to the core material. If you do, please let us know your findings!

73 de Perry
N0NMC@N0LBA.#CEMO.MO.USA.NOAM (Packet)
pogletre@mail.coin.missouri.edu (Internet)

From owner-qrp-l@netcom.com Fri May 19 00:47:03 1995
Date: Thu, 18 May 1995 19:47:03 -0500 (CDT)
From: "Perry W. Ogletree" <pogletre@mail.coin.missouri.edu>
Subject: Re: series vs parallel VFO tank
Message-Id: <Pine.SUN.3.91.950518194449.26279C@bigcat>

Duhhhh! I need to read the WHOLE message before hitting "R"!
The sun was in my eyes! ;-)

36.50000 de Perry (only halfway there tonight!)
N0NMC@N0LBA.#CEMO.MO.USA.NOAM (Packet)
pogletre@mail.coin.missouri.edu (Internet)

From owner-qrp-l@netcom.com Fri May 19 03:34:47 1995
From: JCoote@aol.com
Date: Thu, 18 May 1995 23:34:47 -0400
Message-Id: <950518233447_124111201@aol.com>
Subject: Small Tuner Question

I am thinking about building a small L-network type antenna tuner to be used with a random-wire and counterpoise.

The L-network will be the standard configuration, with the inductance in series and a 360 pF "broadcast" cap at the output between antenna and ground.

This configuration provides low-pass at most settings and is more suited to the medium and high impedances of a random-wire.

I am debating on whether to use a rotary switch and a small tapped 25 uH air-core inductor, or to try a few things with small toroids as follows:

- A: A single toroid with tapped winding. (I've heard this is less efficient than "B" or "C")
- B: Using a double-pole rotary switch to select one toroid (in series) at a time. Combinations limited to switch positions.
- C: Using several toroids of different values, with slide or toggle switches on each toroid to get a wide number of combinations out of a few toroids. (I saw something like this in QRP Quarterly several years ago).

(I've found that a large-scale tuner of this type using a 250 pF variable and 25 uH military roller inductor worked well with many lengths of wire and counterpoise on 9 HF bands, but now I would like to build something small for 5 watts and under.)

Any comments on loss in toroid-based tuners like the above?

Thanks,

Jay WB6AAM (ARCI 5050)
jcoote@aol.com
WB6AAM@K6VE.#SOCA.CA.USA.NA

From owner-qrp-l@netcom.com Fri May 19 22:43:01 1995
Date: Fri, 19 May 1995 15:43:01 -0700 (PDT)
From: Jeff Jones <jeffj@crl.com>
Subject: Re: Small Tuner Question
Message-Id: <Pine.SUN.3.91.950519153950.17851C-100000@crl.crl.com>

I have an additional question regards to that random wire tuner. Instead of ground could you use a 1/4 radial instead? Meaning the random wire in series with the coil and 1/4 radial in series with the cap.
It seems that it should work but one always wonders.

Jeff

From owner-qrp-1@netcom.com Sat May 20 03:26:45 1995
From: JCoote@aol.com
Date: Fri, 19 May 1995 23:26:45 -0400
Message-Id: <950519232644_125338527@aol.com>
Subject: Re: Small Tuner Question

Jeff and the group...

Regarding your random-wire tuner questions:

You can use a 1/4 wave radial at the tuner for each "troublesome" band instead of a random length counterpoise or "ground". By troublesome, I mean bands which will not tune, or which cause a hot chassis. Some hams who live in high-rises or who cannot get a cold water ground have had to resort to this 1/4 wave radial method of keeping RF off the chassis.

Now, for nine HF bands that's quite a few 1/4 wave radials hanging from the window, stapled to baseboards, disguised as TV or phone lines, etc.

A simpler way to go would be to experiment with antenna and counterpoise length until you get a single combination which will work on all bands, and sometimes the counterpoise does not have to be *that* long.

Some hams have had good luck with a single tuned counterpoise or radial. A commercial version of this product is the "MFJ Artificial Ground". This is a low-impedance matching device consisting of a variable capacitor and inductor in series. An RF pick-off indicates tuning for maximum "RF current" in the counterpoise I believe. The MFJ is set up next to the station tuner and connected in series with the counterpoise.

In some apartment/condo/invisible installations, it may be better to use a 1/4 wave, random or tuned counterpoise rather than try to ground to AC neutral or ground. Often, a counterpoise or a long ground lead will act like the "opposite half" of antenna and I'd rather not have the AC wiring radiating if I could help it. When you install a random-wire/counterpoise system you should treat the counterpoise as a radiator- the same as you treat the "antenna" because it radiates also.

One caveat about certain tuners which advertise "random-wire" or "longwire" capability. Some really poor tuner designs do not have enough L/C inside to match much more than a 50-ohm dummy load... well, more like 25-150 ohms.

These tuner manufacturers will state (in very fine print) that the "longwire" or "random" wire must be PRUNED to 1/4 wave on EACH band for the tuner to work. (Also check that the balun acts as an RF transformer from 1.8-29 Mhz!)

Some good maximum starting values for L and C in a tuner may be 200-350 pF and 20-30 uH. Some designs get by with less, but their owners may have spent more time finding THE antenna/counterpoise length which tunes on all bands.

I'm sure there will be plenty of comments and suggestions regarding random-wire tuners, grounds, radials, counterpoises and tuned counterpoises.
;-)

72, Jay WB6AAM

From owner-qrp-l@netcom.com Fri May 19 05:20:17 1995
Date: Thu, 18 May 1995 22:20:17 -0700
From: faunt@netcom.com (Doug Faunt N6TQS +1-510-655-8604)
Message-Id: <199505190520.WAA23478@netcom9.netcom.com>
Subject: SMC Components

Someone posted a source of SMC parts from someplace that also had a kit of pieces for practicing, I think. I've lost that mail, and would appreciate a copy.
73, doug

From owner-qrp-l@netcom.com Fri May 19 14:32:11 1995
Date: Fri, 19 May 1995 07:32:11 -0700
From: nlist@netcom.com (Michael L. Ardai)
Message-Id: <199505191432.HAA04803@netcom4.netcom.com>
Subject: So long, and thanks for all the fish

Having just read Chuck Adam's message to qrp-l, it looks like the list is being moved over to Lehigh. It has been fun running the list, and I appologize for some of the problems and non-responsiveness of Netcom.

No need to unsubscribe from qrp-l@netcom.com. I'll shut that one down on Monday (5/22), and I will try to get forwarding set up so posts to the old address will get forwarded to the new list (we are still getting posts forwarded from think.com...)

Please note that the changes in qrp-l will *not* change any of the other 14 lists I run. I'll still be on qrp-l (probably the digest version; I

am eagerly awaiting that feature), and can be reached at n1list@netcom.com.

72,
/mike
n1list@netcom.com
Maintainer, BARC lists

From owner-qrp-l@netcom.com Fri May 19 16:53:24 1995
Date: Fri, 19 May 1995 10:53:24 -0600
From: Paul Harden <pharden@aoc.nrao.edu>
Message-Id: <199505191653.KAA25126@zia.aoc.nrao.edu>
Subject: Re: So long, and thanks for all the fish

Mike,
Allow me to thank you for all the fine work you have done with QRP-L.
Working here at the radio observatory means we were one of the first
sites on Internet YEARS ago. I enjoy this hobby and sharing technical
info and have always been highly disgusted that the amateur newsgroups
tend to have so little to do with the hobby itself. I have been elated
since subscribing to QRP-L and have tried to be a good quality
contributor. Since QRP-L, I scarcely turn on the newsreader anymore.

While I understand this change will not alter the content of QRP-L,
merely changing sites, the concept and your maintenance has produced one
of the most enjoyable and productive forums for a host of interests.
Your efforts are highly appreciated. A JOB WELL DONE!

72, Paul NA5N

-----NATIONAL RADIO ASTRONOMY OBSERVATORY ----- Socorro, New Mexico -----
| VLA - Very Large Array Observatory - Worlds largest radio telescope |
| VLBA - Very Long Baseline Array - even larger |
----- (pharden@zia.aoc.nrao.edu) --- (73 de NA5N) -----

From owner-qrp-l@netcom.com Sat May 20 00:08:42 1995
From: ssalgaller@ccgate.hac.com
Date: Fri, 19 May 95 16:08:42 PST
Message-Id: <9504198009.AA800925196@CCGATE.HAC.COM>
Subject: Suggested Solar Source

Please consider the SUN Electronics CO. (SUNELCO) as a

source for solar power (and some wind and water too).
I just have received their catalogs, and talked with their
people, but I'm sure they are at least worth considering for
solar power equipment. They are at: (800) 338-6844 (voice)
or (406) 363-6046 (fax); PO Box 1499, Hamelton MT 59840
(snail mail)
73's
Stephen S.
WA3ZGT

From owner-qrp-1@netcom.com Thu May 18 15:16:44 1995
Date: Thu, 18 May 1995 08:16:44 -0700 (PDT)
From: Monte Stark <ku7y@sage.dri.edu>
Subject: Re: The NE602 - good or bad?
Message-Id: <Pine.SUN.3.90.950518081319.5317C-100000@nimbus>

Hi David,

Just one little word about my experience with a 602 rig.

My NorCal 40a works just as well next to strong local
signals as my TS 930 does. Nothing measured, just that
when W6XF, who lives about a block is on running about
100w I have to move to another band if I use the 930.

Using the 40a I can continue to enjoy 40m if we are 20 khz
or so apart.

So I would say to not sell the 602 short.

73, Ron, dah, dah (I'm three times slower than Chuck)

.....KU7Y.....ARCI #8829.....Monte "Ron" Stark.....
.....ku7y@sage.dri.edu.....Sun Valley, Nevada....
.....ARRL.....NorCal #330.....NRA LIFE.....

From owner-qrp-1@netcom.com Sat May 20 02:04:00 1995
Subject: Re: Tree time & other vag
From: brian.carling@acenet.com (Brian Carling)
Message-Id: <2a6.24688.500@acenet.com>
Date: Fri, 19 May 1995 21:04:00 -0500

From: brian.carling@acenet.com

Randy Pelt writes:

RP>Check out the giant sling shot in the May (?) issue of QST. This looks
RP>great for slinging objects over trees. I too have lost many a good wrench
RP>in the top limbs :-).

RP>Sorry...try April CQ :-).

And while you are at it guys, if you just CAN'T seem to find that
2 ounce flourescent orange lead weight after you catapult it over the
top of a tree, hey, why not use a BEEPER?

I suggest you use your best friend's pager JUST in case something
should "happen" to it.

Before you put it in the slingshot, turn it on, then go to the nearest
phone and dial the number. When the pager starts beeping, you can find
it no matter where it is. Hidden in tall grass? Not a problem!!

:-)

~ SLMR 2.1a ~ If the shoe fits, buy it - Imelda Marcos

From owner-qrp-l@netcom.com Wed May 17 23:01:47 1995

Date: Wed, 17 May 1995 23:01:47 GMT

From: dick@kanga.demon.co.uk (Dick G0BPS)

Message-Id: <10577@kanga.demon.co.uk>

Subject: Tree Time UK version

Hi gang,

The Dover (as in white cliffs) have had great time with trees.
We have found that the best idea to get a line over a high tree
(over 100 feet) is a fishing rod with a fixed spool reel and
an apple. Use the apple as the weight and get a good caster
(thrower of line) over the tree branch of choice. If he misses,
the apple won't kill anyone. But Don't hold onto the line as
one of our members did and almost lose a finger.....

TTFN and Q our P....

--

```
*****
*   Dick G0BPS / G0R00 / 9H3JX  Kanga Products  *
*           Email to Dick@kanga.demon.co.uk      *
*           Packet msgs to me via GB7RMS          *
*   or even write a letter to me via snail mail  *
*                                           *
*   isn't this "communications hobby" wonderful! *
*****
```

From owner-qrp-1@netcom.com Fri May 19 14:09:19 1995
From: N5EM@aol.com
Date: Fri, 19 May 1995 10:09:19 -0400
Message-Id: <950519100916_124463367@aol.com>
Subject: Using Ladder Line

Jerry,

Only problems relate to the fact that metallic objects in close proximity to the ladder line affect its characteristics. And since most of us have aluminum windows, this is a problem. If, on the other hand, you can bring your ladder line into the house and maintain 4 to 6 inches spacing from metallic objects (including your equipment cases), go for it. Remember, many of the discussions you read here revolve around the "best" way to do something. Often, if you try it your way, you may find that it works just fine. Just be aware of the potential problems and don't chase your tail around the house trying to figure out what could be wrong if you have bypassed some standard recommendation.

Good luck.

Ed, N5EM

From owner-qrp-1@netcom.com Fri May 19 00:49:51 1995
From: PDouglas12@aol.com
Date: Thu, 18 May 1995 20:49:51 -0400
Message-Id: <950518204950_123700940@aol.com>
Subject: Whiterook Paddles

I promised to review the iambic paddles from Whiterook, so here it is: The little guy arrived today. It reminds me a lot of the straight key that arrived two weeks ago. It is very simple. The base is a little red plastic pill box two inches square and 1/2" high. It sits on four little rubber stick-on feet. The arms of the paddle are pieces of black vinyl glued to a little cube of lexan. At the business end, two 8-32 machine screws act as the contacts (heads of screws face inward, nut on the outside. Solder lugs stick downward from the same screws, attached to small wires inside the box. The inner contact is a 1/2" machine screw and metal spacer which the screw heads contact. The output is a 1/8" stereo jack. Paddle handles are flat square stick-on rubber cabinet feet.

Having seen it, I could probably copy it for peanuts. But why bother? For ten bucks postpaid, this is just what I ordered for a pocket knocker. It is too light to be fragile. If I break it, either I can fix it or buy

another one! It is a cross between junk and clever, and I have decided I like it. Well guys, if you want gems, go to Tiffany's.

Another thing I figured out. You can't actually use this one -ouncer on a table top. It would slide all over the place. But you don't have to. Just pick it up, lean back and send in a reclined position! It would be silly to bother attaching the key to the desk top. Just hold it with one hand and send with the other. On receive, if you aren't a head copier, you will have to put the paddles down to lean forward and pick up your pencil. Another motivator for the physically lazy (me) to do more copying without writing.

This is real armchair operating. CW mobiles will have to figure out another system, since they will hardly survive long using both hands to send!

Do I recommend it. Yup. Not for a "daily driver," but for top down weather, this will be fun. It feels about right, and I have no trouble keying my CMOSII with it. My Bencher is much better, you'll be releived to know.

Whiterook Products Company, 309 S. Brookshire Ave., Ventura, CA 93003 (\$9.95 ppd. for paddles, 8.95 ppd. for straight key++7.25%tax if you live in California). Obviously, I have no pecuniary interest in Whiterook.

Preston WJ2V